Pro Capture Family Driver

User Manual

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Safety Information

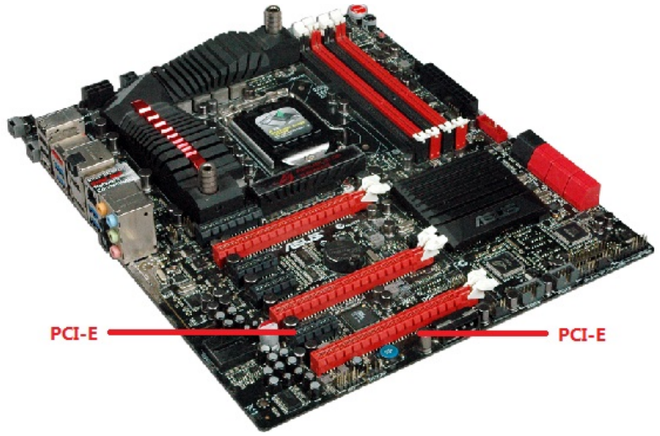
Electrical Safety

- When devices are installed, make sure that the computer is turned off before the signal cables are connected. If possible, disconnect all power cables from the computer before adding a device.
- Make sure that your power supply is set to the correct voltage for the supply in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

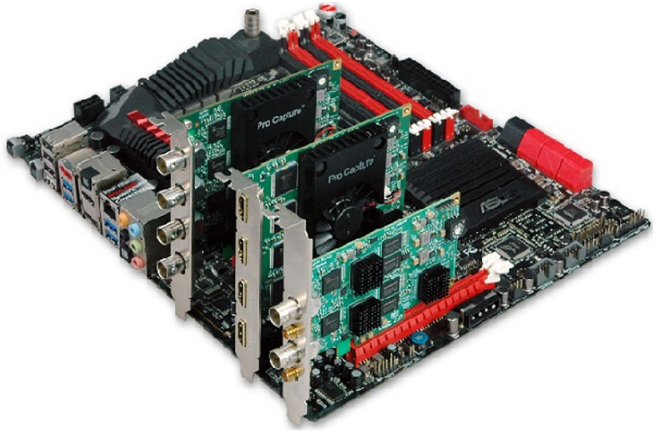
Operation Safety

- Before installing devices on your motherboard, carefully read all the manuals that come with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and extreme temperature. Do not place or use the product in any area where it may be exposed.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

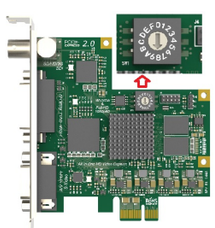
Hardware Installation



(a) Sample Motherboard inside the chassis



(b) Motherboard inside the chassis with capture cards installed



(c) Rotary switch

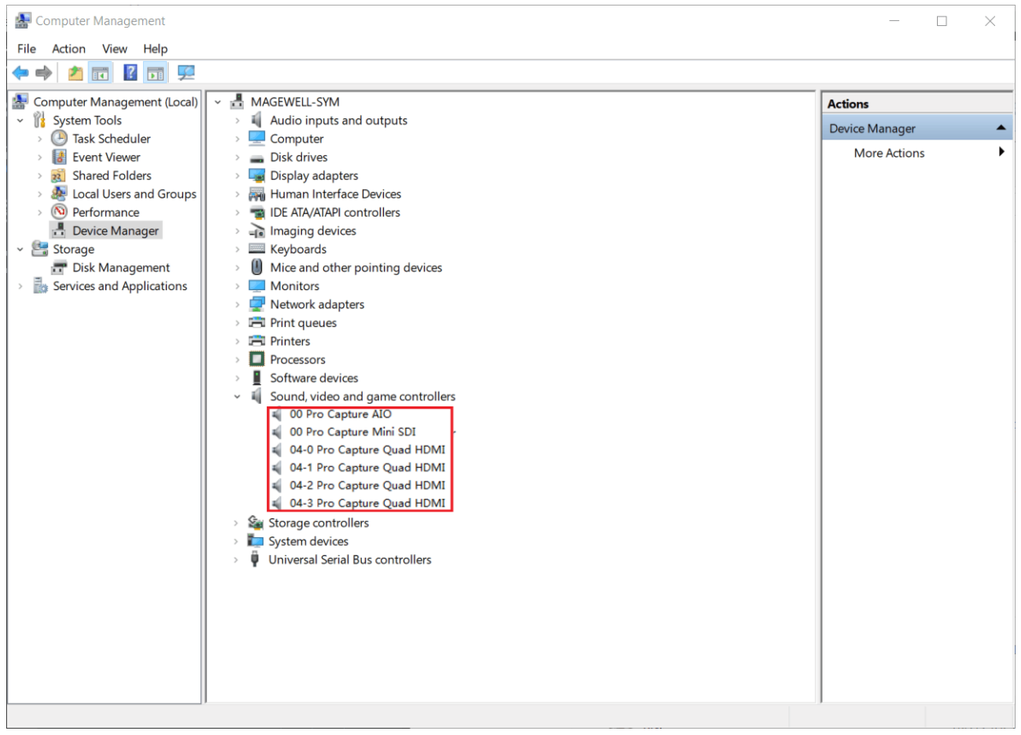
Procedure

1. Turn off the computer power and unplug the power cables.
2. Remove the chassis cover and locate the PCI Express slot(s), as shown in figure (a).
3. Move the retaining clip to the **open** position (usually by pushing down on it) on the PCIe slot into which you are going to insert the card.
4. Plug the video capture card into the slot and make sure it is firmly seated, as shown in figure (b).
5. Screw the card onto the rear panel of the chassis.
6. If multiple cards are to be installed, we suggest that you set card number of each card before installation. There is a rotary switch on each card marked in hexadecimal from 0 to F which enables you to set specific number for each card according to their needs, as shown in figure (c). After the ID numbers are set, users can install the cards according to steps 3-5.
7. Restore the chassis cover.
8. For DVI cards and others with analogue inputs, use the included breakout cable to connect the video source and the video capture card.
9. Reconnect all the power cables.

Driver Installation

System requirement

- Minimum requirements: CPU - Intel Core 2 Duo E7200; RAM - 1GB; integrated graphics card; integrated sound card.
- Recommended: CPU - Intel Core i7-6800K @ 3.40GHz; RAM - 8GB; Graphics Card - NVIDIA Quadro M4000.
- Supported Operating Systems:
  - Windows 7 x64/x86
  - Windows 8 x64/x86
  - Windows 8.1 x64/x86
  - Windows 10 x64/x86
  - Windows Server 2008 x64/x86
  - Windows Server 2008 R2 x64/x86
  - Windows Server 2012 x64/x86
  - Windows Server 2012 R2 x64/x86
  - Windows Server 2016



Driver Installation and Uninstallation

Driver Installation Procedure

1. Double-click **MWDriverInstaller_xxx.exe** to install the program.

    i. If there is an existing driver in the system, the program will compare the version automatically, and you are prompted whether to uninstall the existed one.

    ii. If you are going to uninstall the existed one, click **Yes**, then continue to install the current driver, follow the prompts to complete the installation process.

2. To confirm whether the installation is successful.

    i. Right click **This PC** and select **Manage > Device Manager > Sound, video and game controllers**, and then check if your capture card model(s) are shown in the list of installed devices.

    In the device list, you can see all the capture cards that are installed in this computer. The number before the Pro Capture card name is the ID (E.g. 00 or 04 in the example), which is set via the rotary switch on the card. For multi-channel cards, the channel number will be added after the ID number. (E.g. 04-0, 04-1, 04-2, 04-3 for a Quad card)

    i. Choose a capture device and right click **Properties > Driver**. Check the version of the current driver. If it is the same as the installed driver version, the installation has been successful.

Driver Uninstallation Procedure

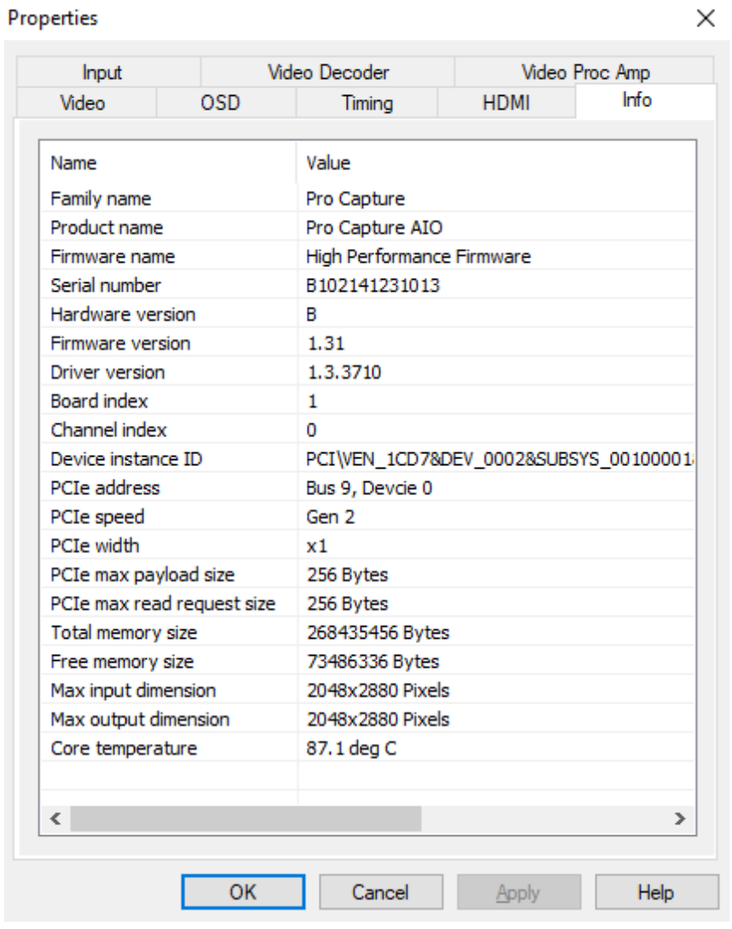
1. Select the **Start** button, then select **Settings** **> Apps**.
2. Choose the **Magewell Pro Capture Driver version** program, and then select **Uninstall**.
3. To confirm whether the uninstallation was successful.

i. Right click **This PC** and select **Manage > Device Manager > Sound, video and game controllers**.

ii. Check that your capture card model(s) are removed from the list of installed devices.

Settings

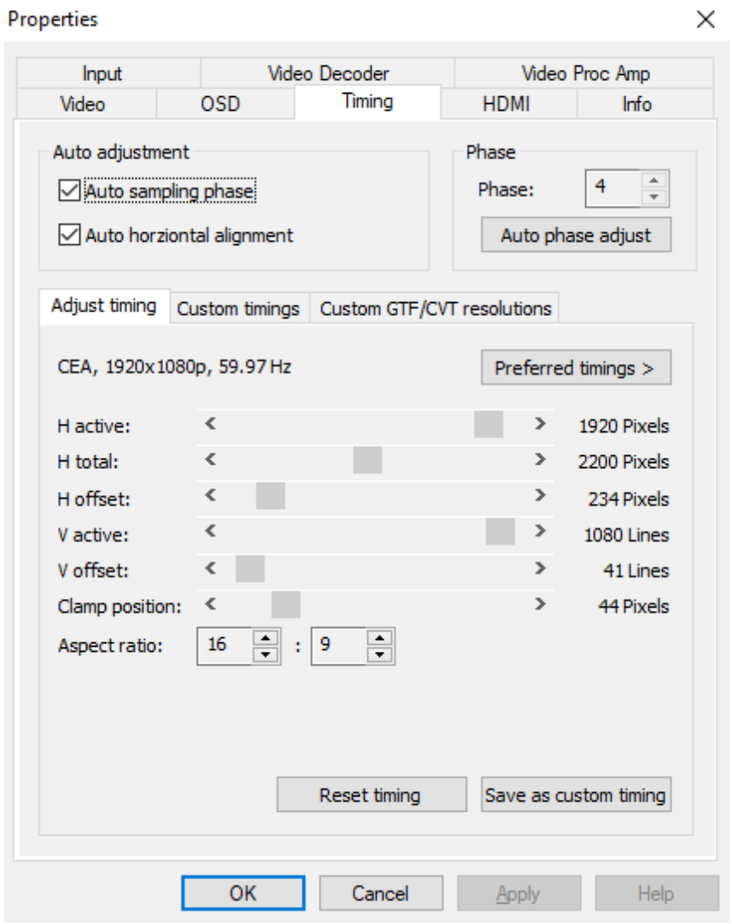
The attributes of the Pro Capture Card can be ticked and modified through video capture software, e.g. AMCap or OBS. The parameters are as follows.



Info

Item	Item Description
Family name	Shows the name of the product family (Pro Capture).
Product name	Shows the name of this specific product.
Firmware name	Shows the name of the firmware.
Serial number	Shows the serial number.
Hardware version	Shows the hardware version of this product.
Firmware version	Shows the firmware version currently installed.
Driver version	Shows the driver version currently in use.
Board index	Shows the board ID number, a hexadecimal value from 0 to F. Set via a rotary switch on the card. It will be 0 for a mini card.
Channel index	Shows the zero-based channel number. It will be 0 for a single channel card; 0/1 for a dual channel card; 0/1/2/3 for a quad channel card.
Device instance ID	The key value can be found in the registry at: Registry\Computer\HKEY_LOCAL_MACHINE \SYSTEM\CurrentControlSet\Services\ProCapture.

Item	Item Description
PCIe address	Shows the PCIe bus number and device number.
PCIe speed	Shows the PCIe bus speed (e.g. Gen1, Gen 2).
PCIe width	Shows the PCIe bus bandwidth (options are x1, x2, x4, x8, x16).
PCIe max payload size	Shows the max length of valid PCIe bus data.
PCIe max read request size	Shows the max size of PCIe bus read request.
Total memory size	Shows the current onboard memory size (e.g. 256MB).
Free memory size	Shows the currently unused memory size.
Max input dimension	Shows the max video input resolution.
Max output dimension	Shows the max video output resolution.
Core temperature	Shows the current temperature of FPGA chip core.



Timing

When the capture card in use has a component or VGA capture interface, this Timing tab will be shown. The parameters can only be set when the input signal is either a component video signal or a VGA video signal. It is provided by Pro Capture AIO, Pro Capture DVI, Pro Capture Dual DVI video cards.

Item Name	Item Description
Auto sampling phase	Ticked by default. The capture card will automatically fine-tune the video to achieve optimum clarity.
Auto horizontal alignment	Ticked by default. The card automatically makes adjustments to attain the correct horizontal position of the video.
Phase	It can be manually or automatically adjusted. The range is 0-63.

Adjust timing

When the signal is being captured, the device will automatically recommend one or more timings as shown in the **Preferred timings** list. The first one in the list will be shown above the timing adjustment section by default. If none of the recommended timing matches, you can drag the slider bars below to manually adjust.

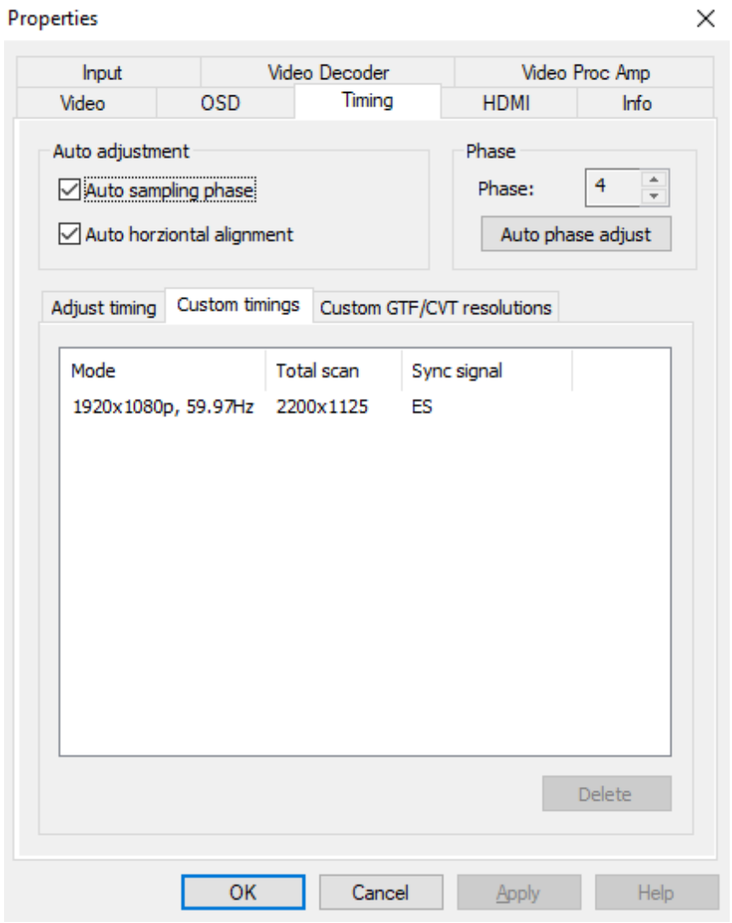
Item Name	Item Description
H active	Active horizontal picture width.
H total	Total horizontal pixels captured.
H offset	Set the value to move the image horizontally. Note: The dimensions have the following relation: H total >= H active + H offset, for example, H active = 1920, H total = 2200, as a result, H offset <= 280.
V active	Active vertical picture width.
V offset	Set the value to move the image vertically. Note: The dimensions have the following relation: V total >= V active + V offset, for example, V active =1080, V total=1125, as a result V offset <= 45.
Clamp position	Used to adjust the sampling point of A/D conversion to remove interference, usually do not need to be modified.
Aspect ratio	Set the aspect ratio of input video.

To add a new custom timing:

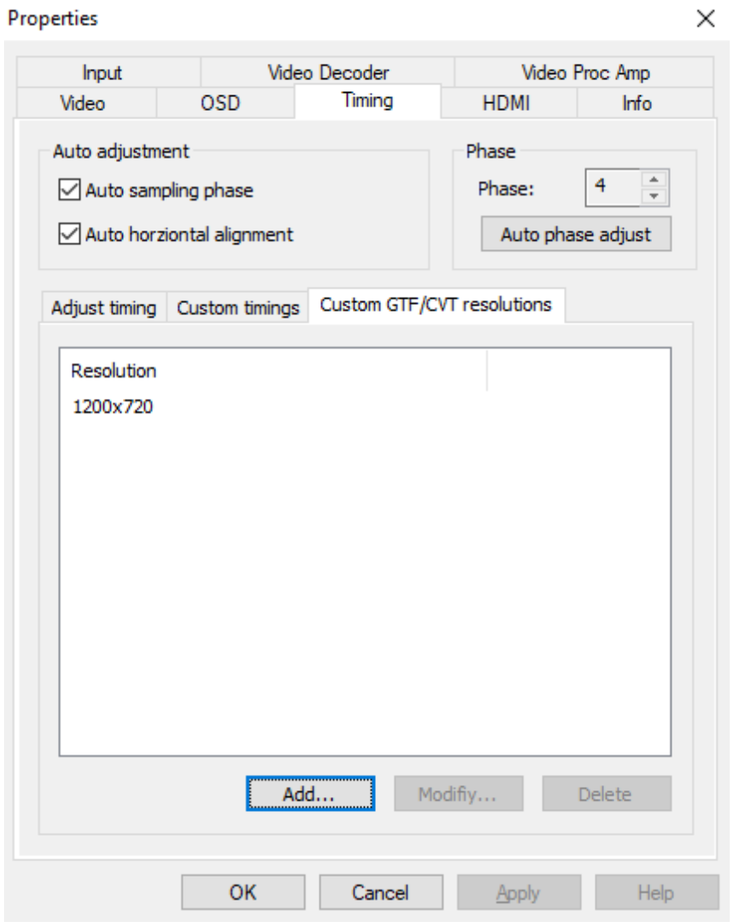
- Click **Save as custom timing** to save the correct timing setting in the **Custom Timings** tab. When the same video signal is connected again, the card will automatically show the video according to the previously saved profile.

To reset timing:

- Click **Reset timing** to set the custom timing as the current timing. If no custom timing is available, the first one in the recommended list will be set as the current timing.



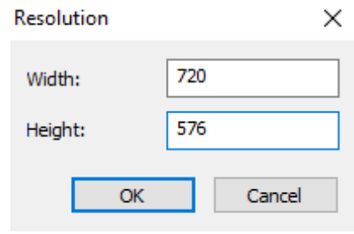
Item Name	Item Description
Custom timings	This shows the saved custom setting in **Adjust timing**, including resolution, frame rate, pixel sampling, and synchronization method. When the same video signal is connected again, the card will automatically show the video according to the previously saved setting. If the user wants to delete the past setting(s), they can choose the setting in **Custom timings** and click **Delete**.



Item Name	Item Description
Custom GTF/CVT resolutions	If adjustments made in the **Timing Adjustment** tab cannot achieve satisfactory results, users can manually add a resolution that meets GTF or CVT standards.

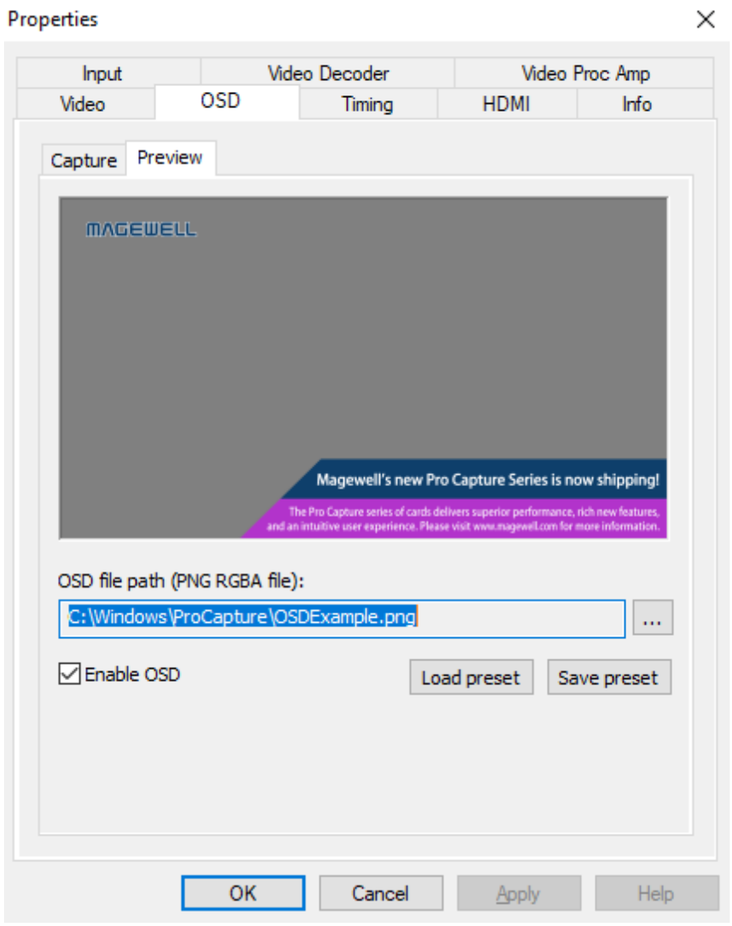
To add a new resolution:

- Click **Add** and input a valid **Width** and **Height**.



To modify or delete a resolution:

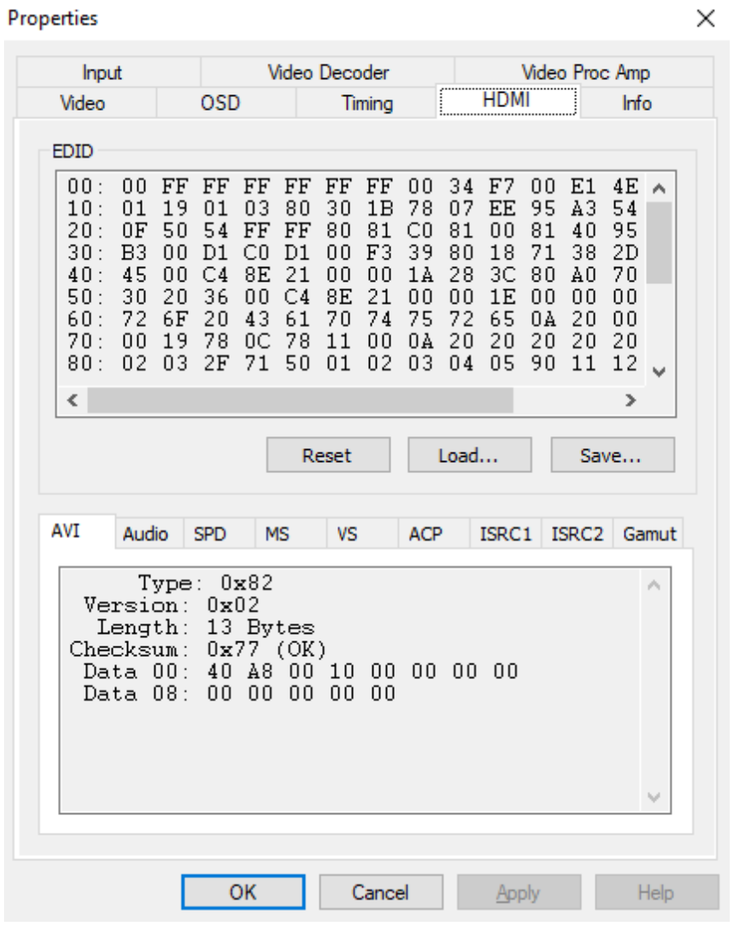
- Click a resolution, then click **Modify** or **Delete** to change existing values.



OSD

An image with transparency (i.e. alpha channel) can by overlaid on the incoming video by using the OnScreenDisplay (OSD) function.

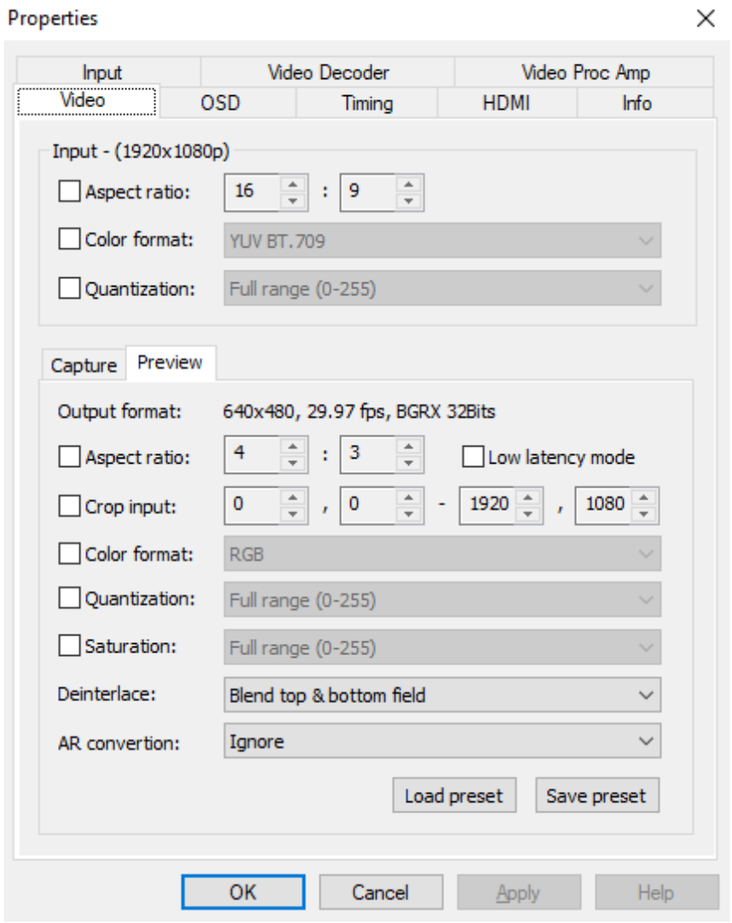
1. Browse to select a PNG RGBA image from local folder.
2. Click **Enable OSD** to activate the overlay.
3. Click **Save preset** to save the current image/path as a template. Then users can click **Load preset** to load the image in the previously saved OSD file path.



HDMI

When the capture card has one or more HDMI interface(s), the **HDMI** tab will be available in the control panel.

Item Name	Item Description
EDID	Standard data in VESA format. It shows the supplier's information, max resolution, color settings, manufacturer's preset, frequency range, name of monitor and string of serial number.
Reset	Resets the current EDID to the default one.
Load	Loads a local EDID file.
Save	Saves the current EDID.
AVI	Shows type, version and verify bit of the video stream and the verification result.
Audio	Shows the type, version and verify bit of the audio stream and the verification result.
SPD, MS, VS, ACP, ISRC1, ISRC2, Gamut	Show information of the HDMI InfoFrame.

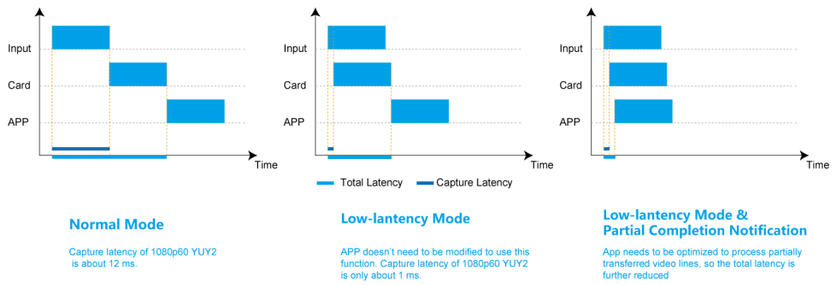


Video

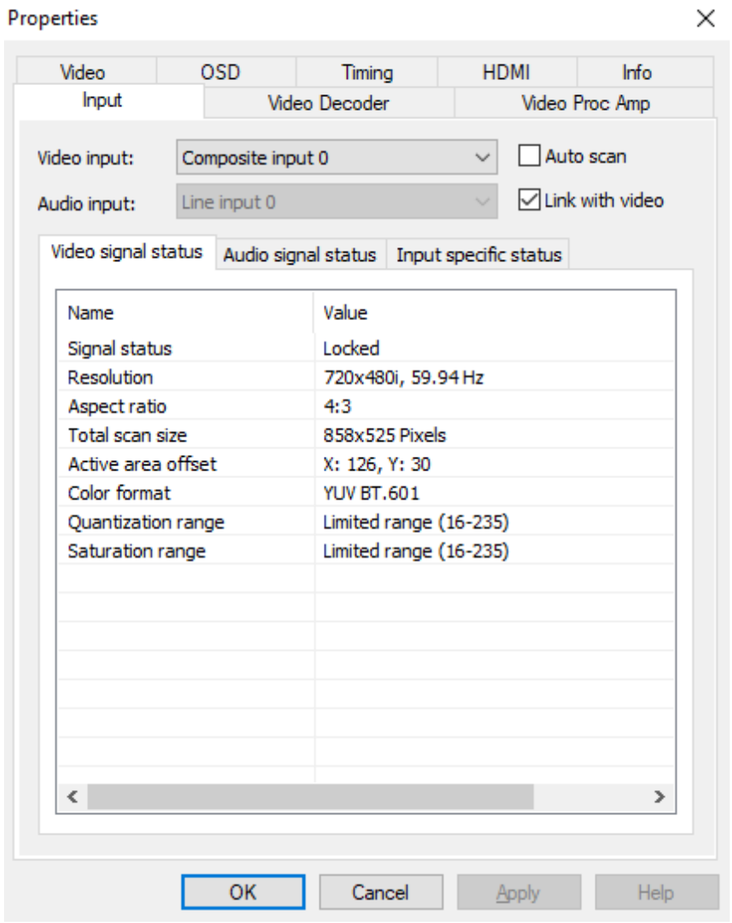
By default, **Input** shows the input information extracted from the signal. If a non-standard signal is incorrectly recognized by the capture device, users can manually adjust the parameters.

Item Name	Item Description
Aspect ratio	Shows the aspect ratio of the current input. If the box is ticked (The shortcut key is the Space key), users can adjust the aspect ratio by clicking on the arrows (Shortcuts are up and down arrow keys).
Color format	Shows the color space of the current input. If the box is ticked, other color spaces can be chosen from the drop-down list (The shortcut key is the Enter key).
Quantization	If the box is ticked, the quantization values of **Full range** and **Limited range** can be chosen.

Preview/Capture

Item Name	Item Description
Output format	Shows the current resolution, frame rate and color space of the previewed video. When the settings of this stream are changed, the data here will be changed accordingly.
Aspect ratio	Shows the aspect ratio of the current output.
Low latency mode	The latency will be reduced when low latency mode is chosen. It can be very useful and the benefit is obvious in video conferencing. Take video capture card with PCIe 2.0 x1 (such as ProCaptureAIO) for example, the comparison of three modes of data transfer, normal mode, low-latency mode, low-latency mode and partial completion notification mode, is shown as follows. 
Crop input	Adjusts the captured pixel area from the input video by cropping the edges, using X/Y pixel values for top/left and bottom/right.
Color format	Shows the color space for capturing. If the box is ticked, other color spaces can be chosen.
Quantization	Users can choose **Full range** or **Limited range**.
Saturation	Shows the grades of saturation of the input signal. Options are **Full range**, **Limited range** and **Extended GAMUT range**.
Deinterlace	The range of values: ▪ Weave: Combines the top field and bottom field into a frame without any other process. Usually used to capture the original data. ▪ Blend top & bottom field: Merges two fields together and deinterlaces via FPGA to ensure a CPU-free video processing. ▪ Top field only: Copy the top field data in vertical direction as a full frame. ▪ Bottom field only: Copy the bottom field data in vertical direction as a full frame. Deinterlacing is a process of converting interlaced video into a non-interlaced form, and half size the frames after processing. For example, the input signal is a 60 field/s interlace signal, the device delivers a 30 FPS progressive signal after processing.

Item Name	Item Description
AR conversion	Aspect Ratio conversion mode options include: ▪ Ignore: Ignore the original aspect ratio and stretch to full-screen. ▪ Cropping: Expand to full-screen and remove parts of the image when necessary to keep the original aspect ratio. ▪ Padding: Fit to screen and add black borders to keep the original aspect ratio.
Load preset	Loads the saved presets.
Save preset	Saves the current settings as presets.



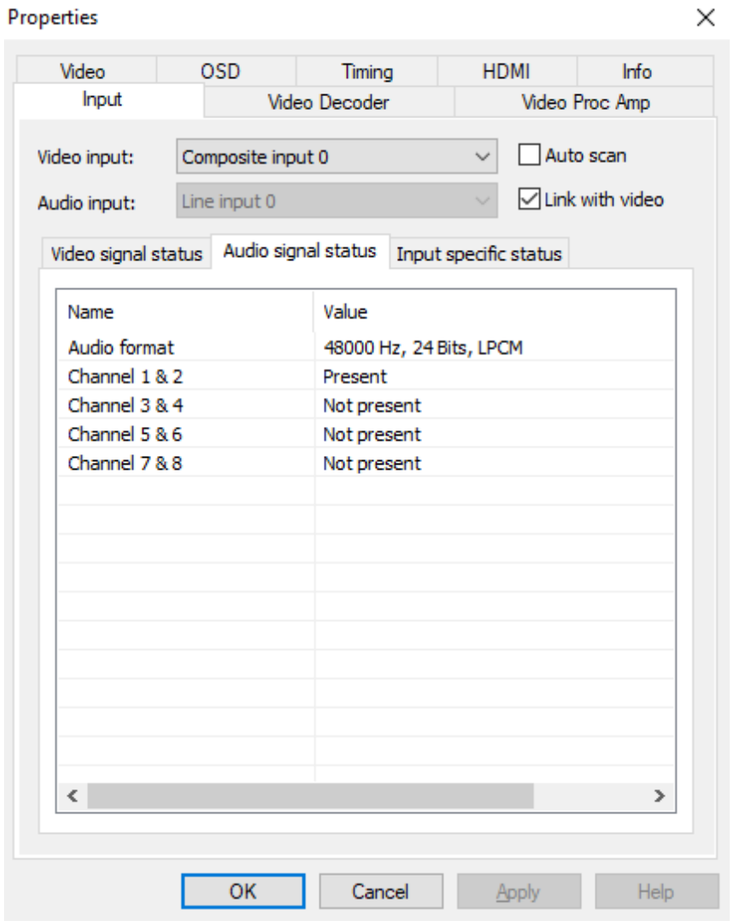
Input

Item Name	Item Description
Auto scan	Automatically scans the input signals by default. If the box is unticked, users can manually select the input signal.
Link with video	Automatically scans for an audio signal embedded in the video signal by default. If the video signal is changed, the audio signal will automatically be changed to try to match the video signal. If the box is unticked, users can manually select the audio signal.

Note: when both of them are unticked, digital video signal, e.g. HDMI, SDI, can link with all kinds of audio, while analog video signal can only link with analog audio.

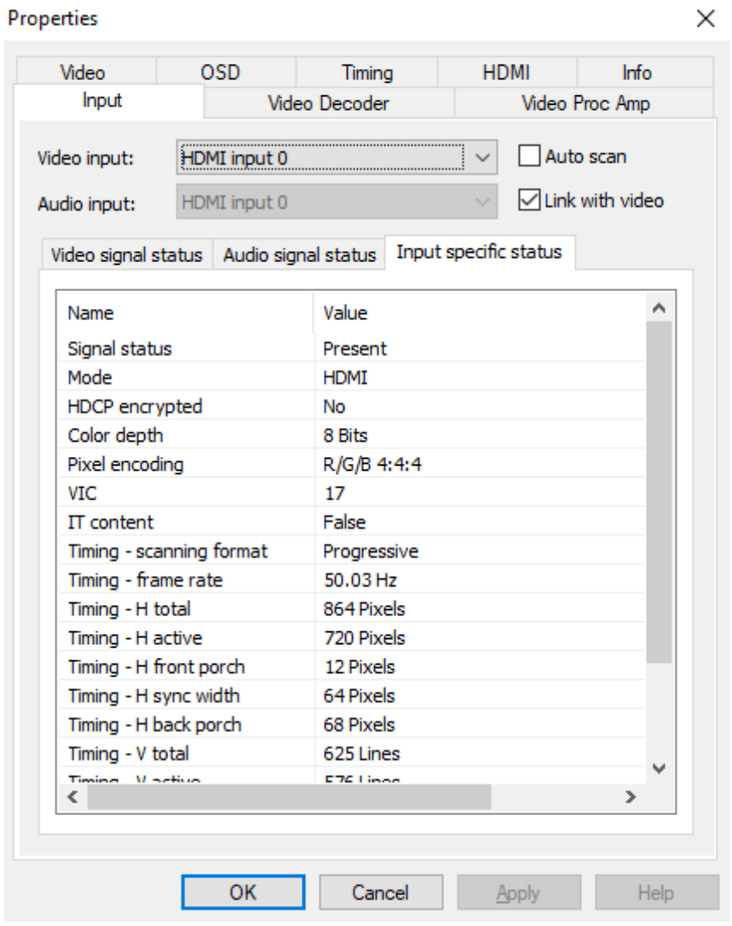
Video signal status

Item Name	Item Description
Signal status	Shows the video input signal information parsed by the device, shown as **Locked**, **Unsupported**, **Not Present**.
Resolution	Shows resolution and frame rate of the input video. If the input signal changes, this display will be changed accordingly.
Aspect ratio	Shows the aspect ratio of input video source.
Total scan size	Shows the total scanned pixel area.
Active area offset	Shows the current horizontal and vertical offset of the active signal within the total area scanned.
Color format	Shows the chosen color space of the video signal.
Quantization range	Shows the luminance quantization range Options: Full range (e.g. 0-255) or Limited range (e.g. 16-235 - for 8-bit inputs).
Saturation range	Shows the saturation of the input signal. Options are **Full range**, **Limited range** or **Extended GAMUT range**.



Audio signal status

Item Name	Item Description
Audio format	Shows the sampling frequency, bit depth and format of the current audio.
Channels 1&2 Channels 3&4 Channels 5&6 Channels 7&8	Shows the current audio stream status for each channel pair. Options are **Present** or **Not present**. NOTE: These values only indicate the presence of audio signal channels, and are in no way indicative of audio signal levels. An audio channel can be shown as **Present** even if no actual audio data is being received. The analogue line input will always be shown as **Present** even when no audio cable is connected.



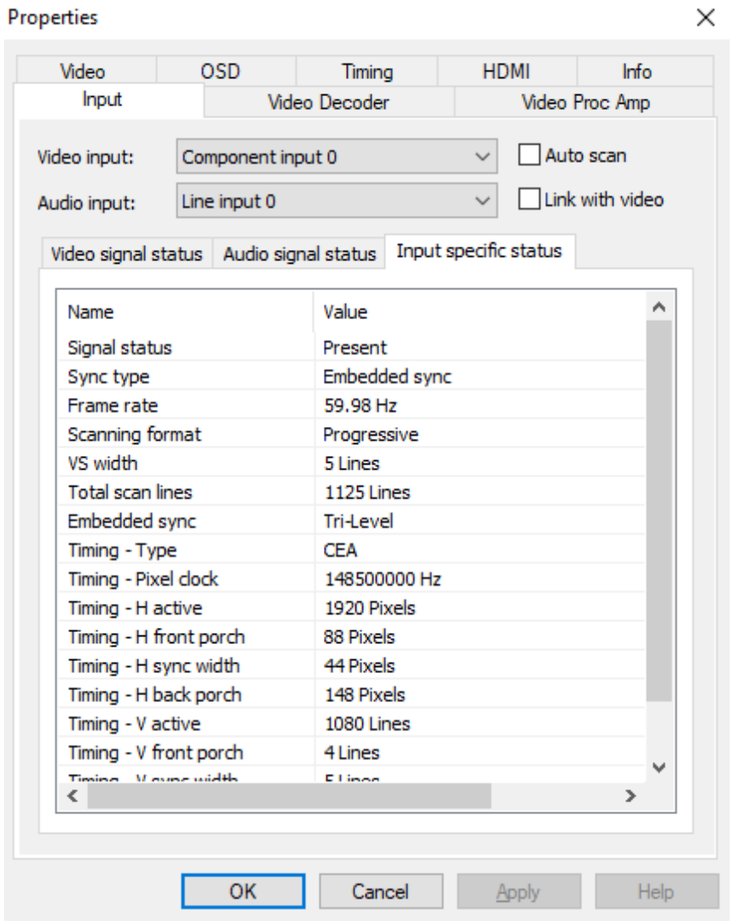
- When HDMI signal is connected, the **Input specific status** tab is as follows:

Item Name	Item Description
Signal status	Options are **Present** or **Not present**.
Mode	Shows input signal mode.
HDCP encrypted	Shows whether the signal is HDCP encrypted. Options are **Yes** or **No**.
Color depth	Shows the color depth of the current video. Common values are **8 bit**, **10 bit** and **12 bit**.
Pixel encoding	Shows pixel encoding, e.g. R/G/B, Y/U/V, Y/Cb/Cr.
VIC	Standard video identification code.
IT content	If True, pictures are compressed according to common IT practice, or particular requirements derived from IT practice.
Timing-scanning format	Shows the scan format, e.g. **Progressive**, **Interlaced**.
Timing-frame rate	Shows the current frame rate.
Timing-H total	Shows total horizontal pixels captured.
Timing-H active	Shows active horizontal picture width.
Timing-H front porch	Shows pixel width between the end of the active horizontal picture and the start of the horizontal sync pulse.

Item Name	Item Description
Timing-H sync width	Shows width of the horizontal sync pulse.
Timing-H back porch	Shows pixel width between the end of the horizontal sync pulse and the start of the next active horizontal picture line.
Timing-V total	Shows total vertical pixels (i.e. Picture lines) captured.
Timing-V active	Shows active vertical picture height.
Timing-V front porch	Shows number of lines between the last line of the active vertical picture area and the start of the vertical sync pulse.
Timing-V sync width	Shows width of the vertical sync pulse, in lines.
Timing-V back porch	Shows number of lines between the end of the vertical sync pulse and the start of the next active horizontal picture line.

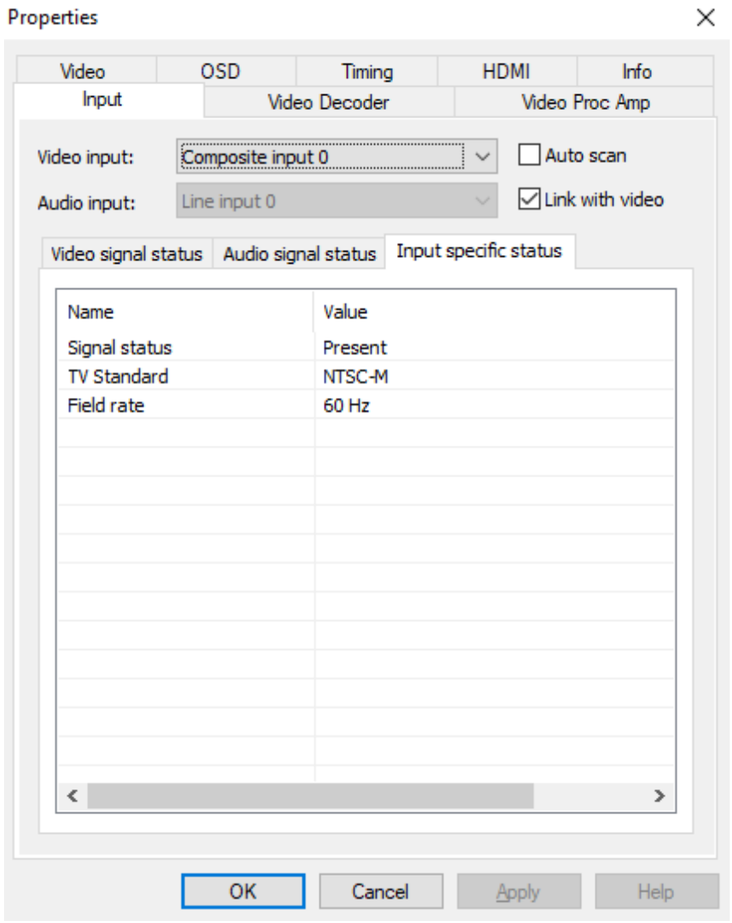
NOTE:

- When the input video signal is in interlaced format, the table will include information for each field separately (Field-0 and Field-1) in the vertical direction.
- When DVI signal is connected, the parameters in the **Input specific status** tab is the same as those of HDMI.



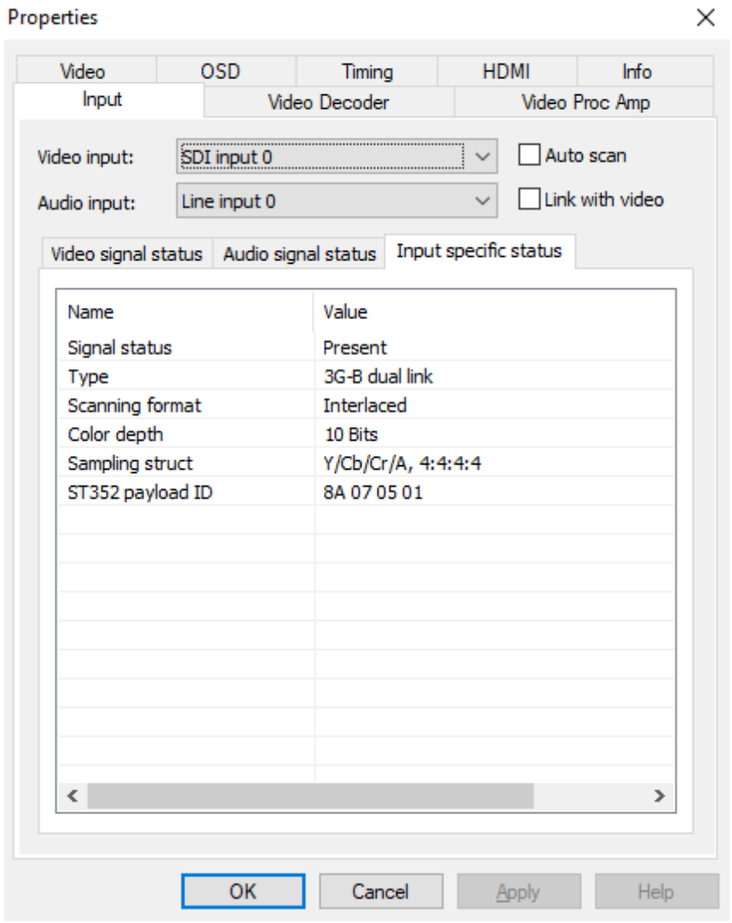
- When component signal is connected, the **Input specific status** tab is as follows:

Item Name	Item Description
Signal status	Options are **Present** or **Not present**.
Sync type	Shows the type of synchronization, e.g. **Embedded**.
Frame rate	Shows the frame rate of the input video.
Scanning format	Options are **Progressive** or **Interlaced**.
VS width	Shows the width of the vertical sync pulse, in lines.
Total scan lines	Shows total number of scanned lines.
Embedded sync	Shows the embedded synchronization method, Options are **Bi-Level** or **Tri-Level**.



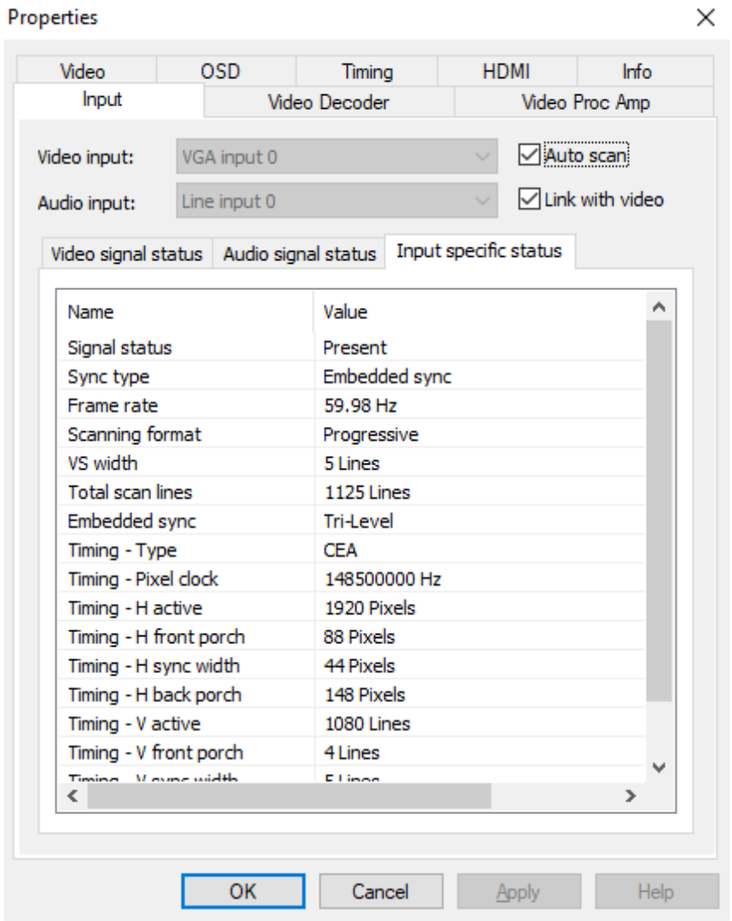
- When CVBS signal is connected, the **Input specific status** tab is as follows:

Item Name	Item Description
Signal status	Options are **Present** or **Not present**.
TV Standard	Options are **PAL**, **NTSC**, **SECAM**.
Field rate	The current field frequency of the video signal.



- When SDI signal is connected, the **Input specific status** tab is as follows:

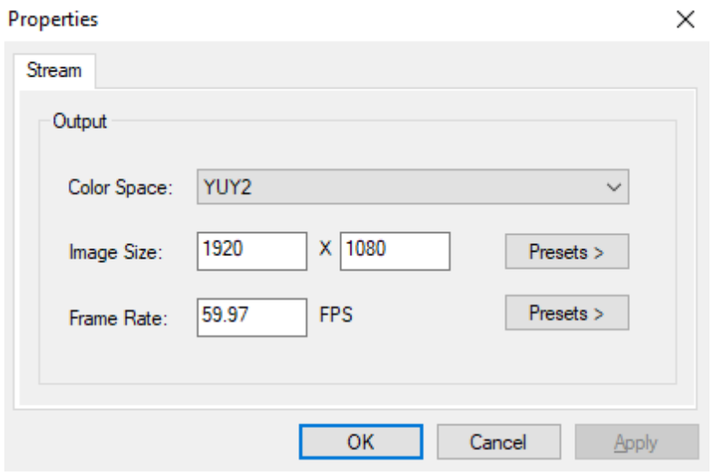
Item Name	Item Description
Signal status	Options are **Present** or **Not present**.
Type	Shows the current video signal type.
Scanning format	Options are **Progressive**, **Interlaced**, **Segmented Frame**.
Color depth	Shows the color depth of the current video, e.g. 8/10/12 bit.
Sampling structure	Shows signal type and sampling ratios.
ST352 payload ID	Shows the current video format of SDI, e.g. color format, aspect ratio.

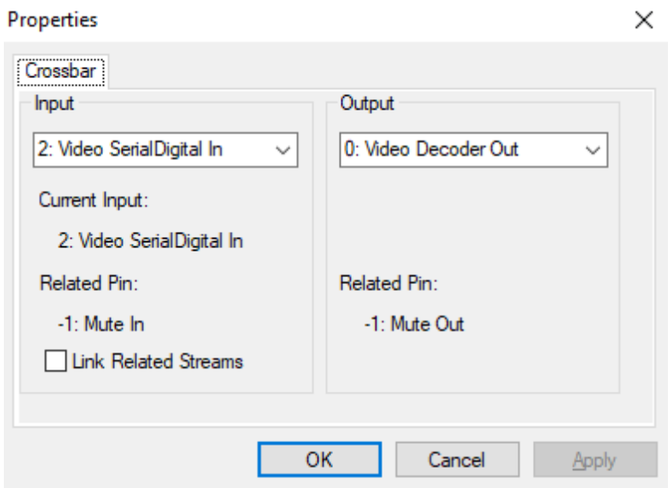


- When VGA signal is connected, the **Input specific status** tab is as follows:

Item Name	Item Description
Signal status	Options are **Present** or **Not present**.
Sync Type	Shows the type of synchronization.
Frame rate	The frame rate of the video source.
Scanning format	Options are **Progressive** or **Interlaced**.
VS width	Shows width of the vertical sync pulse, in lines.
Total scan lines	Shows total number of scanned lines.
Timing-Type	Shows type of timing standard used.
Timing-Pixel clock	Shows the pixel-scanning frequency.
Timing-H active	Shows active horizontal picture width, in pixels.
Timing-H front porch	Shows pixel width between the end of the active horizontal picture and the start of the horizontal sync pulse.
Timing-H sync width	Shows width of the horizontal sync pulse, in pixels.
Timing-H back porch	Shows pixel width between the end of the horizontal sync pulse and the start of the next active horizontal picture line.
Timing-V active	Shows active vertical picture height, in lines.

Item Name	Item Description
Timing-V front porch	Shows number of lines between the last line of the active vertical picture area and the start of the vertical sync pulse.
Timing-V sync width	Shows width of the vertical sync pulse, in lines.
Timing-V back porch	Shows number of lines between the end of the vertical sync pulse and the start of the next active horizontal picture line.





Output

Item Name	Item Description
Color Space	Select from drop-down list manually to modify color space.
Image Size	Enter manually or click **Presets >** and select from those listed. The value shown in bold is the system-preferred value.
Frame Rate	Enter manually or click **Presets >** to select from those listed. The value shown in bold is the system-preferred value.

Video Crossbar

Select an **Input** signal type from the drop-down list, **Current Input** is auto-detected by the system. The selected signal should be the same as the actual one, otherwise, video will not be displayed correctly. You can set the **Video Crossbar** after setting the value of **EnableXBar** as **1** in the registry at: \Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\ProCapture and restarting the computer.
The range of Input values:

1. Video Parallel Digital In = SDI signal
2. Video Serial Digital In = HDMI signal
3. Video RGB In = VGA signal
4. Video YRYBY In = YPbPr signal
5. Video S-Video In = S-Video signal
6. Video Composite In = CVBS signal